Rapid ELSA Analysis on UN Biodiversity Lab Instructions for Requesting Use of National Data

The rapid ELSA analysis is built to be applicable for any country in the world, and therefore relies on global data. However, we recognize that many countries have national data that is better suited for use within the analysis. The rapid ELSA analysis enables you to request national data layers be used in place of specific global data layers. These instructions walk you through the process of requesting the use of national data.

Global data that can be replaced by national data

See below for a complete list of global data that is eligible to be replaced with national data.

- National Protected Areas
- Intact and Wilderness Areas
- Underrepresented Ecosystems
- Threatened Ecosystems
- Key Biodiversity Areas
- Alliance for Zero Extinction Sites
- Threatened Species Richness
- Agricultural Yield Gap
- Agricultural Climate Stress
- High Integrity Forests
- Wetlands and RAMSAR Sites
- Mountains and Glaciers
- Potential Clean Water Provision
- Land Degradation and Desertification
- Biomass Carbon Density
- Irrecoverable Carbon
- Vulnerable Soil Organic Carbon Density
- Potential Increase in SOC on Croplands
- Mangrove Forests
- Drought Risk
- Flooding Risk Opportunities
- Urban Greening Opportunities
- Indigenous Managed Lands
- Productive Managed Forests

Single layers that were used in above composite layers are also replaceable, for example, the ecosystem map used in the Underrepresented Ecosystems layer. To access metadata on each of these datasets, please see Annex 1.

Criteria for use of national data

If you would like to request the 'swap-in' of national data in place of global data in your rapid ELSA analysis, you should ensure that it is higher quality than the global equivalents, including but not limited to: accuracy, resolution, scale, completeness, consistency, or/and currentness.

- Accuracy: How closely the spatial data reflects reality over time and space. Having an understanding of the accuracy of a particular dataset will therefore allow you to understand how reliable it is for your planning process.
- Resolution: Where possible, data should be the raw/highest resolution data. Data that has already been aggregated into subnational administrative units is less useful.
- Scale: Spatial data should be at the national scale (fully cover your country's territorial land, as in the ELSA map). A dataset that maps a feature that in actuality only covers part of a country is still considered to be at a national scale (for example, glaciers only occur in one small mountainous area of the country). On the contrary, if the map only covers the feature at the subnational level while it actually occurs in more locations across the country, the map will be considered incomplete and will not be used
- Completeness: Please make sure data used to represent a particular feature is consistent across the country. For example, considering a layer depicting national forest cover, the data would be incomplete if it only includes forest cover in one province.
- Consistency: For geospatial data, consistency refers to conformity with certain topological rules. For example, a polygon must be closed; a non-closed polygon is considered a geometric error. Errors in spatial attributes can also make a dataset inconsistent.
- Currentness: Data should be the same year or more current than the global data used in the analysis.

If you have any questions on whether your data meets these criteria, please contact us at support@unbiodiversitylab.org.

National data format

Data should be vector (ESRI shapefiles, Geopackages, GeoJSON, etc.) or/and raster (.tif). Please ensure that your data matches the following recommendations as closely as possible:

- For ESRI Shapefiles, please make sure to include .shp, .shx, .dbf, .cpg and .prj files in a single folder for each Shapefile

- For raster data, GeoTIFF (.tif/.tiff) format is highly preferred, but if needed, we can assist in converting any raster format such as NetCDF, ASCII, etc. We encourage users to compress these files, either internally (e.g., Geotiffs) or in an archive format (.zip) as this can massively reduce the size of files to be transmitted
- Regardless of data type and format, ensure that your data includes valid projection information; WGS84 is recommended (EPSG:4326).

Data submission

To submit data, please reach out to us at support@unbiodiversitylab.org. We will provide a google sheet and transfer link to collect all needed information. You should be prepared to provide upon request:

- UNBL workspace name & slug
- The name of the data layer (s) you want to switch
- Description of the national data you would like swapped in, and an explanation of why this data is better for your country to ensure our science team processes it correctly
- Shapefile/Raster file name (exactly the same of the file uploaded)
- Attribute to use
- File Type (ESRI Shapefile, Geotiff, Geopackage, Geojson, etc.)
- Source Citation / source link
- File path (if the file contains multiple folders)
- Data scales (national, regional, etc.)

Further information on the rapid ELSA analysis

For additional information, access our full guide on conducting a rapid ELSA analysis using the UN Biodiversity Lab.

Annex 1. Data Layers Used in the Rapid ELSA Analysis on UNBL

Group	Name	Layer Description	Original data used	Citation
Features	Intact and Wilderness Areas	The layer represents the contribution of each cell to ecoregion intactness, a measure of a cell's condition and its connectivity to adjacent cells of good condition. Use directly as a continuous measure of intactness / wilderness quality.	Ecoregions intactness (Beyer et al., 2020)	Beyer, H. L., Venter, O., Grantham, H. S., & Watson, J. E. (2020). Substantial losses in ecoregion intactness highlight urgency of globally coordinated action. Conservation Letters, 13(2), e12692.
Features	Underrepresented Ecosystems	The layer is composite with the world's terrestrial ecosystems and WDPA. If the coverage of protected areas within a certain ecosystem is under 30%, this ecosystem is considered as underrepresented in this layer. The value assigned to a given planning unit is the percentage of unprotected areas within the ecosystems.	World Terrestrial Ecosystems (Sayrer et al., 2020) The World Database on Protected Areas (WDPA) (UNEP-WCMC and IUCN, 2021)	Sayre, R., Karagulle, D., Frye, C., Boucher, T., Wolff, N.H., Breyer, S., Wright, D., Martin, M., Butler, K., Van Graafeiland, K., Touval, J., Sotomayor, L., McGowan, J., Game, E.T., Possingham, H., 2020. An assessment of the representation of ecosystems in global protected areas using new maps of World Climate Regions and World Ecosystems. Global Ecology and Conservation 21, e00860. https://doi.org/10.1016/j.gecco.2019.e00860 UNEP-WCMC and IUCN (2022), Protected Planet: The World Database on Protected Areas (WDPA) and World Database on Other Effective Area-based Conservation Measures (WD-OECM) [Online], April 2022, Cambridge, UK: UNEP-WCMC and IUCN. Available at: www.protectedplanet.net.

Group	Name	Layer Description	Original data used	Citation
Features	Threatened Ecosystems	For country, calculate ecosystem threat status as the proportion of that ecosystem that has an intactness value less than the median for all planning units within the country.	World Terrestrial Ecosystems (Sayrer et al., 2020) Ecoregions intactness (Beyer et al., 2020)	Sayre, R., Karagulle, D., Frye, C., Boucher, T., Wolff, N.H., Breyer, S., Wright, D., Martin, M., Butler, K., Van Graafeiland, K., Touval, J., Sotomayor, L., McGowan, J., Game, E.T., Possingham, H., 2020. An assessment of the representation of ecosystems in global protected areas using new maps of World Climate Regions and World Ecosystems. Global Ecology and Conservation 21, e00860. https://doi.org/10.1016/j.gecco.2019.e00860 Beyer, H. L., Venter, O., Grantham, H. S., & Watson, J. E. (2020). Substantial losses in ecoregion intactness highlight urgency of globally coordinated action. Conservation Letters, 13(2), e12692.
Features	Key Biodiversity Areas	Key Biodiversity Areas are sites that contribute significantly to the global persistence of biodiversity in terrestrial, freshwater and marine ecosystems. Sites qualify as global KBAs if they meet one or more of 11 globally agreed upon criteria, including: threatened biodiversity; geographically restricted biodiversity; ecological integrity; biological processes; and, irreplaceability. We only include KBAs that have been identified at the international level and exclude Alliance for Zero Extinction (AZE) sites,	World Database of Key Biodiversity Areas (BirdLife International, 2022)	BirdLife International (2021). World Database of Key Biodiversity Areas. Managed by BirdLife International on behalf of the KBA Partnership: BirdLife International, International Union for the Conservation of Nature, American Bird Conservancy, Amphibian Survival Alliance, Conservation International, Critical Ecosystem Partnership Fund, Global Environment Facility, Re:Wild, NatureServe, Rainforest Trust, Royal Society for the Protection of Birds, Wildlife Conservation Society and World Wildlife Fund.

Group	Name	Layer Description	Original data used	Citation
		which are included as a separate standalone layer in ELSA. Please visit the World Database of Key Biodiversity Areas website (https://www.keybiodiversityareas.org/).		March 2021 Version. Available at http://www.keybiodiversityareas.org.
Features	Alliance for Zero Extinction Sites	The Alliance for Zero Extinction (AZE) is a joint initiative of biodiversity conservation organizations from around the world working to prevent extinctions by promoting the identification and ensuring the safeguard and effective conservation of key sites that are the last remaining refugees of one or more Endangered or Critically Endangered species. AZE sites are included in the global Key Biodiversity Areas (KBA) database, but we include them in ELSA as a standalone conservation feature. See: https://zeroextinction.org.	World Database of Key Biodiversity Areas (BirdLife International, 2022)	BirdLife International (2021). World Database of Key Biodiversity Areas. Managed by BirdLife International on behalf of the KBA Partnership: BirdLife International, International Union for the Conservation of Nature, American Bird Conservancy, Amphibian Survival Alliance, Conservation International, Critical Ecosystem Partnership Fund, Global Environment Facility, Re:Wild, NatureServe, Rainforest Trust, Royal Society for the Protection of Birds, Wildlife Conservation Society and World Wildlife Fund. March 2021 Version. Available at http://www.keybiodiversityareas.org.
Features	Threatened Species Richness	This layer represents the number of species of threatened amphibians, birds, mammals, reptiles and plant taxa whose distribution distribution overlaps in each planning unit.	NatureMap Threatened species richness (UNEP-WCMC, 2020)	UNEP-WCMC (2020) Threatened species richness. Derived from Areas of Habitat maps created from data from the IUCN Red List, BirdLife International, the Global Assessment of Reptile Distributions (GARD), the Botanical Information and Ecology Network (BIEN) database and additional vascular plant species ranges were created from point data from the IUCN Red List,

Group	Name	Layer Description	Original data used	Citation
				Botanic Gardens Conservation International (BGCI), the Global Biodiversity Information Facility (GBIF) and iNaturalist. Cambridge, UK.
Features	Agricultural Yield Gap	Average yield gaps for maize, wheat and rice, measured as the percentage gap of the observed yield to the attainable yield circa the year 2000. Identify areas for increasing food production.	Attainable yield achieved 2000 (Mueller et al., 2012)	Mueller, N., Gerber, J., Johnston, M. et al. Closing yield gaps through nutrient and water management. Nature 490, 254–257 (2012). https://doi.org/10.1038/nature11420
Features	Agricultural Climate Stress	Predicted change in general agricultural suitability between 1981–2010 and 2071–2100, considering rainfed conditions and irrigation on currently irrigated areas. In this layer, only negative changes in agricultural suitability was included, which are areas projected to experience a decrease in agricultural suitability. The increasing value in planning units identifies increasing loss of agricultural suitability.	Crop Suitability Change (Zabel et al., 2014)	Zabel F., Putzenlechner B., Mauser W. (2014): Global agricultural land resources – a high resolution suitability evaluation and its perspectives until 2100 under climate change conditions. Online available: PLOS ONE. DOI: 10.1371/journal.pone.0107522

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Features	High Integrity Forests	Identify structurally complex forests with low human pressure that are likely to be most valuable for biodiversity and ecosystem services, including water security. Average FSII and FLII data where both available, for places not covered by FSII, directly use FLII.	Forest Structural Integrity Index (Hansen et al., 2019) Forest Landscape Integrity Index (Grantham et al., 2020)	Hansen, A., Barnett, K., Jantz, P. et al. Global humid tropics forest structural condition and forest structural integrity maps. Sci Data 6, 232 (2019). https://doi.org/10.1038/s41597-019-0214-3 Grantham, H.S., Duncan, A., Evans, T.D. et al. Anthropogenic modification of forests means only 40% of remaining forests have high ecosystem integrity. Nat Commun 11, 5978 (2020). https://doi.org/10.1038/s41467-020-19493-3
Features	Wetlands and RAMSAR Sites	The distribution of wetland that covers the tropics and subtropics, and wetlands of international importance (Ramsar). Only Ramsar sites identified by a polygon are used. When Ramsar polygons are available, wetlands given a value of 0.5, Ramsar sites a value of 1, as these are recognized as internationally important wetlands. Otherwise use wetland only.	Global Wetlands: Tropical and Subtropical Wetlands Distribution (Gumbricht et al., 2017) Ramsar sites (Ramsar Convention on Wetlands, 1971)	Gumbricht, T., Roman-Cuesta, R.M., Verchot, L., Herold, M., Wittmann, F., Householder, E., Herold, N., Murdiyarso, D., 2017. An expert system model for mapping tropical wetlands and peatlands reveals South America as the largest contributor. Global Change Biology 23, 3581–3599. https://doi.org/10.1111/gcb.13689 Wetlands International/Ramsar (2022). Ramsar Sites Information Service. Wetlands International and Ramsar Convention Secretariat. http://ramsar.wetlands.org

Group	Name	Layer Description	Original data used	Citation
Features	Mountains and Glaciers	The distribution of mountains and glaciers. Combined with 0.5 weight accordingly.	Global Mountain Explorer K3 (Karagulle et al., 2017) Randolph Glacier Inventory 6.0 (RGI Consortium, 2017	Karagulle, D., C. Frye, R. Sayre, S. Breyer, P. Aniello, R. Vaughan, and D. Wright. 2017. Modeling global Hammond landform regions from 250-m elevation data. Transactions in GIS, DOI: 10.1111/tgis.12265 RGI Consortium (2017). Randolph Glacier Inventory – A Dataset of Global Glacier Outlines: Version 6.0: Technical Report, Global Land Ice Measurements from Space, Colorado, USA. Digital Media. DOI: https://doi.org/10.7265/N5-RGI-60
Features	Potential Clean Water Provision	This dataset shows the total potential supply of clean water available to users in m. Water quantity in each pixel is calculated as the water balance (rainfall minus actual evapotranspiration) cumulated downstream. See Mulligan et al. (2013) for a description of the global water balance dataset. Potential water provisioning services for each cell are first calculated as the volume of clean water available from upstream. The volume of water is calculated as the downstream cumulated water balance based on (rainfall+fog+snowmelt)-actual evapotranspiration. All analyses were carried out using the WaterWorld (Mulligan 2013) and Co$ting Nature (Mulligan et al. 2010)	Potential Clean Water Provision (Mulligan et al., 2019)	Mulligan, M. (2019) Potential Clean Water Provision. Model results from the Costingnature version 3 policy support system (non commercial-use). http://www.policysupport.org/costingnature [prepared by user mark.mulligan_kcl.ac.uk]Wetlands International/Ramsar (2022). Ramsar Sites Information Service. Wetlands International and Ramsar Convention Secretariat. http://ramsar.wetlands.org

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Features	Land Degradation and Desertification	The World Atlas on Desertification (WAD3) builds on a systematic framework of providing a convergence of reliable, global evidence of human environment interactions to identify local or regional areas of concern where land degradation processes may be underway. Concerns can be validated or dismissed only by evaluating them within local biophysical, social, economic and political contexts. Local context provides an understanding of causes and consequences of degradation, but also offers guidance for efforts to control or reverse it. ELSA uses the summary, convergence of evidence layer from WAD.	World Atlas of Desertification (WAD) - Convergence of Evidence (Cherlet et al., 2018)	Cherlet, M., Hutchinson, C., Reynolds, J., Hill, J., Sommer, S., von Maltitz, G. (eds.), World Atlas of Desertification, Publication Office of the European Union, Luxembourg, 2018. doi:10.2760/06292
Features	Live Biomass Carbon Density	This layer provides a spatially explicit estimation of above- and below-ground terrestrial live biomass carbon density. The original map was produced by combining the most reliable publicly-available datasets on biomass carbon.	NatureMap - Live Biomass Carbon Density (García-Rangel et al., in prep)	García-Rangel, S. et al. (In prep) Global distribution of natural carbon stocks potentially vulnerable to land use changes
Features	Irrecoverable Carbon	Irrecoverable carbon refers to the vast stores of carbon in nature that are vulnerable to release due to human activity and - if lost - could not be restored by 2050, when the world must reach net-zero emissions to avoid the worst impacts of climate change. This layer shows the combined mass of	Irrecoverable carbon (Noon et al., 2021)	Noon, M.L., Goldstein, A., Ledezma, J.C. et al. Mapping the irrecoverable carbon in Earth's ecosystems. Nat Sustain (2021). https://doi.org/10.1038/s41893-021-00803-6

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		irrecoverable carbon (in tonnes per hectare) from both biomass and soil.		
Features	Vulnerable Soil Organic Carbon Density	This layer shows soil organic carbon stocks that could be potentially vulnerable to human impact by 2050.	NatureMap - Vulnerable Soil Organic Carbon Density (García-Rangel et al., in prep)	García-Rangel, S. et al. (In prep) Global distribution of natural carbon stocks potentially vulnerable to land use changes.
Features	Potential Increase in SOC on Croplands	This layer provides an estimate of the potential increase in soil organic carbon within the top 30 cm of soil in croplands after 20 years, following implementation of better land management practices under a high sequestration scenario. The per pixel values here take into consideration the percent of each pixel which is classified as cropland (from the GLC-Share/GLC-02 dataset), and values have been converted to total tonnes of carbon.	Increase in SOC on Croplands After 20 Years – high scenario (Zomer et al., 2017)	Zomer, R.J., Bossio, D.A., Sommer, R., Verchot, L.V., 2017. Global Sequestration Potential of Increased Organic Carbon in Cropland Soils. Scientific Reports 7, 15554. https://doi.org/10.1038/s41598-017-15794-8
Features	Mangrove Forests	The global data on distribution of mangrove in the year 2016.	Global Mangrove Watch - Mangrove Forests 2016 (Bunting et al., 2018)	Bunting P., Rosenqvist A., Lucas R., Rebelo L-M., Hilarides L., Thomas N., Hardy A., Itoh T., Shimada M. and Finlayson C.M. (2018). The Global Mangrove Watch – a New 2010 Global Baseline of Mangrove Extent. Remote Sensing 10(10): 1669. doi: 10.3390/rs1010669.

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Features	Drought Risk	Drought risk is assessed for the period 2000–2014 and is based on the product of three independent determinants: hazard, exposure and vulnerability.	Global map of drought hazard (Carrão et al., 2016)	Carrão, H., Naumann, G., Barbosa, P., 2016. Mapping global patterns of drought risk: An empirical framework based on sub-national estimates of hazard, exposure and vulnerability. Global Environmental Change 39, 108–124. https://doi.org/10.1016/j.gloenvcha.2016.04.012
Features	Flooding Risk Opportunities	Flood risk opportunities layer which FRO = Average Flood Risk of planning units in watershed, divided by NDVI value.	Proportion of population exposed to floods (Tellman et al., 2021) MODIS/TERRA NDVI 2022-01-01-16 Global BasinATLAS	Tellman, B., Sullivan, J.A., Kuhn, C., Kettner, A.J., Doyle, C.S., Brakenridge, G.R., Erickson, T.A., Slayback, D.A., 2021 Satellite imaging reveals increased proportion of population exposed to floods. Nature 596, 80–86. https://doi.org/10.1038/s41586-021-03695-w Didan, K. (2015). MOD13Q1 MODIS/Terra Vegetation Indices 16-Day L3 Global 250m SIN Grid V006 [Data set]. NASA EOSDIS Land Processes DAAC. Accessed 2020-12-07 from https://doi.org/10.5067/MODIS/MOD13Q1.006 Linke, S., Lehner, B., Ouellet Dallaire, C., Ariwi, J., Grill, G., Anand, M., Beames, P., Burchard-Levine, V., Maxwell, S., Moidu, H., Tan, F., Thieme, M. (2019). Global hydro-environmental sub-basin and river reach characteristics at high spatial resolution. Scientific Data 6: 283. doi: https://doi.org/10.1038/s41597-019-0300-6

Group	Name	Layer Description	Original data used	Citation
Features	Urban Greening Opportunities	Urban areas with low NDVI and exposure to extreme heat. Layer is composite with MODIS-NDVI data, urban exposure to extreme heat, and urban area from ESRI 10m land cover data. The value in each urban planning unit is calculated as reversed value of ndvi + heat index /2, then rescaled to a range of 0-1.	10m Annual Land Use Land Cover 2020 MODIS/TERRA NDVI 2022 Wet bulb globe temperature (WBGT)	Karra, K., et al. 2021. "Global Land Use/Land Cover with Sentinel 2 and Deep Learning," in 2021 IEEE International Geoscience and Remote Sensing Symposium IGARSS, 4704–4707. Didan, K. (2015). MOD13Q1 MODIS/Terra Vegetation Indices 16-Day L3 Global 250m SIN Grid V006 [Data set]. NASA EOSDIS Land Processes DAAC. Accessed 2020-12-07 from https://doi.org/10.5067/MODIS/MOD13Q1.006 Tuholske, C., Caylor, K., Funk, C., Verdin, A., Sweeney, S., Grace, K., Peterson, P., Evans, T., 2021. Global urban population exposure to extreme heat. Proceedings of the National Academy of Sciences 118, e2024792118. https://doi.org/10.1073/pnas.2024792118
Features	Indigenous Managed Lands	LandMark community level data provides sub-national information at the scale of distinct indigenous or community lands	LandMark Indigenous and community lands (LandMark, 2017)	LandMark. 2017. LandMark: The Global Platform of Indigenous and Community Lands. Available at: http://www.landmarkmap.org/

Group	Name	Layer Description	Original data used	Citation
Features	Productive Managed Forests	Map of managed forests, intersected with Net Primary Productivity data (annual average 2021) to identify productive managed forests.	NatureMap - Human Impact on Forests (Lesiv et al., 2020) Net Primary Production (NPP) MODIS (Running et al., 2019)	Lesiv, M., Schepaschenko, D., Buchhorn, M., See, L., Duerauer, M., Georgieva, I., … Blyshchyk, I. (2020). Methodology for generating a global forest management layer. Zenodo. http://doi.org/10.5281/zenodo.3933966 Running, S., Zhao, M. (2019). MOD17A3HGF MODIS/Terra Net Primary Production Gap-Filled Yearly L4 Global 500 m SIN Grid V006 [Data set]. NASA EOSDIS Land Processes DAAC. Accessed 2021-01-25 from https://doi.org/10.5067/MODIS/MOD17A3HGF.006
Lock-in	Protected Areas	The World Database on Protected Areas (WDPA) is the most up-to-date and complete source of information on protected areas, updated monthly with submissions from governments, non-governmental organizations, landowners, and communities.	The World Database on Protected Areas (WDPA) (UNEP-WCMC and IUCN, 2021)	UNEP-WCMC and IUCN (2022), Protected Planet: The World Database on Protected Areas (WDPA) and World Database on Other Effective Area-based Conservation Measures (WD-OECM) [Online], April 2022, Cambridge, UK: UNEP-WCMC and IUCN. Available at: www.protectedplanet.net.
Zones	Human Footprint Index 2013	The global terrestrial Human Footprint map for the year 2013. The Human Footprint map shown here indicates human pressure scores ranging from 0 - 50, representing five classes of human pressure, each encompassing an equal proportion (~20%) of the planet.	Global terrestrial Human Footprint map (Williams et al., 2020)	Williams, B.A., et al. 2020. Change in Terrestrial Human Footprint Drives Continued Loss of Intact Ecosystems. One Earth 3, 371–382. https://doi.org/10.1016/j.oneear.2020.08.009

Group	Name	Layer Description	Original data used	Citation
Zones	Managed Forests	Managed forest from the Global Forest Certification Map, including managed forest, intact certified and certified forest categories.	Global Forest Certification Map (Kraxner et al., 2017)	Kraxner, F., Schepaschenko, D., Fuss, S., Lunnan, A., Kindermann, G., Aoki, K., ... & See, L. (2017). Mapping certified forests for sustainable management-A global tool for information improvement through participatory and collaborative mapping. Forest Policy and Economics, 83, 10-18. https://doi.org/10.1016/j.forpol.2017.04.014
Zones	Agriculture Areas	Crop land cover form the ESRI 10m Land Use Land Cover data	10m Annual Land Use Land Cover 2020	Global Land Use/Land Cover with Sentinel 2 and Deep Learning," in 2021 IEEE International Geoscience and Remote Sensing Symposium IGARSS, 4704–4707.
Zones	Urban Areas	Built area form the ESRI 10m Land Use Land Cover data	10m Annual Land Use Land Cover 2020	Global Land Use/Land Cover with Sentinel 2 and Deep Learning," in 2021 IEEE International Geoscience and Remote Sensing Symposium IGARSS, 4704–4707.
Zones-restrictions	Protect Zone	Analyse HFP distribution within protected areas, set protect threshold using the HFP that excludes the 5% most modified area of existing protected areas, exclude all agriculture and urban	Global terrestrial Human Footprint map 10m Annual Land Use Land Cover	Williams, B.A., et al. 2020. Change in Terrestrial Human Footprint Drives Continued Loss of Intact Ecosystems. One Earth 3, 371–382. https://doi.org/10.1016/j.oneear.2020.08.009 Karra, K., et al. 2021. "Global Land Use/Land

Group	Name	Layer Description	Original data used	Citation
				Cover with Sentinel 2 and Deep Learning," in 2021 IEEE International Geoscience and Remote Sensing Symposium IGARSS, 4704–4707.
Zones-restrictions	Manage Zone	Hard constraint using HFP, exclude 20% most modified and 20% least modified area of the country (retaining all middle 60%), and include all managed forests from global certification map and all agricultural areas, exclude urban areas	Global terrestrial Human Footprint map 10m Annual Land Use Land Cover Global Forest Certification Map	Williams, B.A., et al. 2020. Change in Terrestrial Human Footprint Drives Continued Loss of Intact Ecosystems. One Earth 3, 371–382. https://doi.org/10.1016/j.oneear.2020.08.009 Karra, K., et al. 2021. "Global Land Use/Land Cover with Sentinel 2 and Deep Learning," in 2021 IEEE International Geoscience and Remote Sensing Symposium IGARSS, 4704–4707. Kraxner, F., Schepaschenko, D., Fuss, S., Lunnan, A., Kindermann, G., Aoki, K., ... & See, L. (2017). Mapping certified forests for sustainable management-A global tool for information improvement through participatory and collaborative mapping. Forest Policy and Economics, 83, 10-18. https://doi.org/10.1016/j.forpol.2017.04.014

Group	Name	Layer Description	Original data used	Citation
Zones-restrictions	Manage Zone (Agricultural Areas Only)	In the case where a country chooses to restrict the definition of management to agricultural areas only, the map of agriculture will be used as the hard constraint.	10m Annual Land Use Land Cover	Global Land Use/Land Cover with Sentinel 2 and Deep Learning," in 2021 IEEE International Geoscience and Remote Sensing Symposium IGARSS, 4704–4707.
Zones-restrictions	Restore Zone	Hard constraint using HFP, exclude 20% most modified and 20% least modified area of the country, exclude urban and agriculture	Global terrestrial Human Footprint map 10m Annual Land Use Land Cover	Williams, B.A., et al. 2020. Change in Terrestrial Human Footprint Drives Continued Loss of Intact Ecosystems. One Earth 3, 371–382. https://doi.org/10.1016/j.oneear.2020.08.009 Karra, K., et al. 2021. "Global Land Use/Land Cover with Sentinel 2 and Deep Learning," in 2021 IEEE International Geoscience and Remote Sensing Symposium IGARSS, 4704–4707.
Zones-restrictions	Restore Zone (Forested Areas Only)	In the case where a country chooses to define restoration as only for forest cover, the hard constraint would be areas that are ecologically forest, but without current forest cover.	NatureMap Potential Natural Vegetation 10m Annual Land Use Land Cover	Hengl, Tomislav, Jung, Martin, & Visconti, Piero. (2020). Potential distribution of land cover classes (Potential Natural Vegetation) at 250 m spatial resolution (v0.1) [Data set]. Zenodo. https://doi.org/10.5281/zenodo.3631254 Karra, K., et al. 2021. "Global Land Use/Land Cover with Sentinel 2 and Deep Learning," in 2021 IEEE International Geoscience and Remote Sensing Symposium IGARSS, 4704–4707.

Group	Name	Layer Description	Original data used	Citation
Zones-restrictions	Urban Areas	Build-up areas from the 10m land cover map	10m Annual Land Use Land Cover	Global Land Use/Land Cover with Sentinel 2 and Deep Learning," in 2021 IEEE International Geoscience and Remote Sensing Symposium IGARSS, 4704–4707.